

Application No.: 10/669,197

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Remarks

Favorable reconsideration of this application in the light of the following discussion is respectfully requested. Claims 1 to 15 are pending. Claim 13 is allowed.

Substance of the Interview

Applicants thank Examiner Meagan Walling and Examiner John Barlow for the courtesies extended to the undersigned attorney during a telephonic interview on June 30, 2004. During the interview, Applicants discussed the present invention and the distinguishing elements of the original claims in view of the cited references to Eichel et al. (U.S. Patent No. 6,266,437), Dalmia et al (U.S. Patent No. 6,259,109), and Floeder et al. (U.S. Patent Application Publication No. 2002/0110269). The essence of that discussion is fully represented in the following remarks.

Rejections under 35 USC § 102

Claims 1, 4, 5, 7-12, 14, and 15 were rejected under 35 USC § 102(b) as being anticipated by Eichel et al. (US 6,266,437).

Regarding claim 1, the Examiner stated that Eichel et al. teach imaging a sequential portion of the continuously moving web to provide digital information, processing the digital information with at least one initial algorithm to identify regions on the web containing anomalies, extracting identified regions from the digital information, and analyzing the extracted identified regions with at least one subsequent algorithm to determine which anomalies represent actual defects in the moving web.

Regarding claim 4, the Examiner averred that Eichel et al. teach that the initial algorithm comprises thresholding the digital information and forming a blob list.

Regarding claim 5, the Examiner stated that Eichel et al. teach that the at least one subsequent algorithm includes thresholding.

Regarding claim 7, the Examiner suggested that Eichel et al. teach that the continuously moving web has a pattern, and wherein the initial algorithm uses to process the digital information is capable of distinguishing between regions of the web containing perfect pattern from regions of the web containing pattern and also possible defects.

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Regarding claim 8, the Examiner indicated that Eichel et al. teach that the at least one subsequent algorithm characterizes at least a portion of the web into quality classifications.

Regarding claim 9, the Examiner stated that Eichel et al. teaches that the identified regions contain information, as indicated by size, having at least an order of magnitude less than the digital information.

Regarding claim 10, according to the Examiner Eichel et al. teach that the subsequent algorithm includes a plurality of steps, wherein each of the plurality of steps comprises comparing each anomaly against a combination threshold-pixel size criterion.

Regarding claim 11, the Examiner averred that Eichel et al. teach that an anomaly is identified as an actual defect if any one of the criteria is satisfied.

Regarding claim 12, the Examiner stated that Eichel et al. teaches that at least some anomalies are reported in real time for process monitoring, process control, or both.

Regarding claim 14, the Examiner indicated that Eichel et al. teach imaging a sequential portion of the continuously moving optical film web to provide digital information, processing the digital information with an initial algorithm consisting of an intensity threshold followed by defect sorting based on blob size to identify regions on the web containing anomalies, extracting subimages from the identified regions in the digital information, and analyzing the extracted anomalies.

Regarding claim 15, the Examiner averred that Eichel et al. teach an imaging device for imaging a sequential portion of the continuously moving web to provide digital information, and computational equipment for processing the digital information with an initial algorithm to identify regions on the web containing anomalies, and then analyzing the extracted identified regions with at least one subsequent algorithm to determine which anomalies represent actual defects in the moving web.

#### Applicants' Response to the Rejections under 35 USC § 102

Applicants traverse the rejection of claims 1, 4, 5, 7-12, 14, and 15 under 35 USC § 102(b) as being anticipated by Eichel et al. U.S. Pat. No. 6,266,437 (hereinafter "Eichel").

The present invention is directed to a method and apparatus for inspecting a web. The method images a sequential portion of the web to provide digital information. The digital

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information is processed with at least one initial algorithm to identify regions on the web containing anomalies. The identified regions are extracted from the digital information. The extracted identified regions are analyzed with at least one subsequent algorithm to determine which anomalies represent actual defects in the moving web. The apparatus of the present invention utilizes an imaging device for imaging a sequential portion of the continuously moving web to provide digital information. Computational equipment is then employed for processing the digital information with an initial algorithm to identify regions on the web containing anomalies, extracting identified regions from the digital information, and then analyzing the extracted identified regions with at least one subsequent algorithm to determine which anomalies represent actual defects in the moving web.

Eichel is directed to a system for detecting defects on a moving web. The system of Eichel utilizes a comparator frame to compare elements from a real time image of the moving web. The comparator utilizes sequential detection on pairs of elements to provide an acceptable indication of the elements versus the comparator frame. The comparator provides a "look-again" indication if the pair of elements are determined to be neither acceptable or defective. In the "look-again" situation, the comparator recursively compares the elements of the exemplar frame with corresponding elements of other frames in the web until an acceptable or defective indication occurs.

Eichel does not describe an inspection system that extracts identified regions that may contain anomalies and then subjects those regions to at least one subsequent algorithm to determine if those regions truly contain defects. Applicants specifically point out that the "look-again" feature described in Eichel only reviews subsequent frames and fails to either extract the region in question or run an additional analysis on that particular region.

According to the MPEP, "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." See MPEP 2131 (quoting *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631) (emphasis added). Since Eichel does not teach or disclose either the element of extracting identified regions or the element of analyzing the extracted regions with at least one subsequent algorithm to determine which anomalies represent actual defects in the web, such reference would not anticipate independent claims 1, 14 or 15, or dependent claims 4, 5, and 7-12 that further limit claim 1.

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Withdrawal of the rejection of claims 1, 4, 5, 7-12, 14, and 15 under 35 USC § 102 is respectfully requested.

Rejections under 35 USC § 103

Eichel et al. in view of Dalmia et al.

Claims 2 and 3 were rejected under 35 USC § 103(a) as being unpatentable over Eichel in view of Dalmia et al. U.S. Pat. No. 6,259,109.

The Examiner averred that Eichel et al. teach all the limitations of claims 2 and 3 except the limitations of storing or buffering the identified regions prior to analyzing (current claim 2), and that the stored or buffered information is analyzed after the imaging has been performed on the entire web (current claim 3).

Regarding claims 2 and 3, the Examiner stated that Dalmia teaches storing the recorded image of the web and playing it back for analysis after recording is complete.

According to the Examiner it would have been obvious to one skilled in the art at the time of the invention to combine the teachings of Eichel with the teachings of Dalmia to store the identified regions prior to analyzing. The motivation for making this combination would be to play back the stored image at a slower speed for easier inspection.

Eichel et al. in view of Floeder et al.

Claim 6 was rejected under 35 U.S.C. 103(a) as being unpatentable over Eichel et al. in view of Floeder et al. (US 2002/0110269).

The Examiner stated that Eichel et al. teaches all the limitations of claim 6 except the limitation that the continuously moving web is unpatterned.

The Examiner noted that Floeder et al. teaches locating defects on unpatterned polymeric films.

According to the Examiner it would have been obvious to one skilled in the art at the time of the invention to combine the teachings of Eichel et al. with the teachings of Floeder et al. to find defects in unpatterned webs. The Examiner concluded that the motivation for making this

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combination would be to find defects in all types of materials and to not limit defect detection to patterned webs.

The Examiner indicated that claim 13 is allowed for the reasons set forth in the Office Action.

Applicants' Response to the Rejections under 35 USC § 103

Eichel in view of Dalmia

Applicants assert that claims 2 and 3 are patentable over Eichel in view of Dalmia U.S. Patent No. 6,259,109 (hereinafter "Dalmia"). Applicants continue to assert that present claims of record are patentable over Eichel for the reasons set forth in Applicants' response to the rejection under 35 USC § 102.

Dalmia teaches and describes a web inspection system for the analysis of a moving web of material. The system of Dalmia records and stores continuous sequences of the web. The system includes a video display for viewing the saved images. The reference also suggests a processing system that is capable of classifying defects (see column 3, lines 22-29). However, Dalmia fails to teach, suggest or disclose the identification of anomalies, the extraction of the identified regions containing anomalies, or the analysis of extracted regions with at least one subsequent algorithm to determine which anomalies represent actual defects.

All claim limitations must be taught or suggested by the prior art, see MPEP §2143.03. The combination of Eichel and Dalmia fails to provide a web inspection system that either extracts regions containing anomalies from a digital data stream or the analysis of the identified regions with at least one subsequent algorithm to determine which anomalies represent actual defects in the web. Thus applicants assert that claims 2 and 3 are patentable over the combination of Eichel and Dalmia. Withdrawal of the rejection is respectfully requested.

Eichel et al. in view of Floeder

Applicants aver that the present invention, as embodied in claim 6, is patentable over Eichel in view of Floeder et al. U.S. Patent Application Publication No. 2002/0110269 (hereinafter "Floeder"). The present invention has been distinguished from Eichel in the foregoing remarks. Floeder teaches a web inspection system that images a sequential portion of a

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moving web to provide a digital data stream that is subsequently analyzed by a single computer. Floeder utilizes filters, binarizers and blobbers to place the digital data stream into a form that is suitable for timely defect analysis. Applicants acknowledge that the reference discloses the use of the system for unpatterned webs. However, the unpatterned webs are subjected to a single analysis to "determine if they represent defective portions of the web or just anomalies that are not defective." (see paragraph 0068 on page 6 of the published application).

Floeder fails to teach, suggest, or disclose an inspection system that extracts identified regions containing anomalies and then further analyzes the extracted regions with at least one subsequent algorithm to detect if the anomalies are true defects.

According to MPEP §2143.03, all claim limitations must be taught or suggested by the prior art. Under the present rejection of claim 6, both Eichel and Floeder fail to teach or disclose either the extraction of regions containing anomalies or the analysis of the identified regions with at least one subsequent algorithm to determine which anomalies represent actual defects in unpatterned webs. Thus applicants assert that claim 6 is patentable over the combination of Eichel and Floeder. Withdrawal of the rejection is respectfully requested.

#### Conclusion

In view of the foregoing remarks, favorable reconsideration of the present application and the passing of this case to issue with all claims allowed is courteously solicited.

Should the Examiner wish to discuss any aspect of this application, applicants' attorney suggests a telephone interview in order to expedite the prosecution of the application.

Respectfully submitted,

July 6, 2004

Date

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